

Amendment dated December 6, 2006

After Final Office Action of September 6, 2006

REMARKS

Upon entry of the present amendment, claims 1-14 will remain pending in the above-identified application and stand ready for further action on the merits.

The amendments made herein to claims 1, 3, 8 and 10 the claims do not incorporate new matter into the Application as originally filed. For example, the amendments made to pending claims 1 and 8 find support in the original filed specification at page 4, lines 25-27 and page 5, lines 18-22, and in originally filed figures 1-2. Likewise, the amendments made to claims 3 and 10 simply improve the English grammatical format of the claims for issuance in a United States Patent.

It is submitted that the instant amendments do not raise any substantial new issue for the Examiner's consideration and require no further search on the Examiner's part after final rejection. Accordingly, entry of the instant amendment and proper consideration of pending claims 1-14 is earnestly solicited at present, as is an early allowance on the merits.

Claim Rejection – 35 USC § 103(a)

Claims 1-14 have been rejected under the provisions of 35 USC § 103(a) as being unpatentable over Ikeda et al. EP '278 (EP 1 246 278). Reconsideration and withdraw of this rejection is respectfully requested based on the following considerations.

Legal Standard for Determining Prima Facie Obviousness

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the

Amendment dated December 6, 2006

After Final Office Action of September 6, 2006

knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

"In determining the propriety of the Patent Office case for obviousness in the first instance, it is necessary to ascertain whether or not the reference teachings would appear to be sufficient for one of ordinary skill in the relevant art having the reference before him to make the proposed substitution, combination, or other modification." *In re Linter*, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972).

Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." *In re Kotzab*, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also *In re Lee*, 277 F.3d 1338, 1342-44, 61 USPQ2d 1430, 1433-34 (Fed. Cir. 2002) (discussing the importance of relying on objective evidence and making specific factual findings with respect to

Amendment dated December 6, 2006

After Final Office Action of September 6, 2006

the motivation to combine references); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

Distinctions over the Cited Art

In the instant amendment to the claims, independent claims 1 and 8 are amended to respectively recite as follows.

1. *An electrode used for a non-aqueous electrolyte secondary battery, which comprises a current collector of a metallic material not to be alloyed with Li and a pattern of dots formed on the current collector, which is a metallic material able to be alloyed with Li,*

*wherein the diameter of each dot is 1-500 micrometers,
the shape of the dots is a cylindrical column or a cone,
the dots are regularly arranged, and
the occupancy rate of the dots on the current collector is 50-90%.*

8. *A non-aqueous electrolyte secondary battery which comprises positive and negative electrodes, the negative electrode comprising a current collector of a metallic material not to be alloyed with Li and a pattern of dots formed on the current collector, which is a metallic material able to be alloyed with Li,*

*wherein the diameter of each dot is 1-500 micrometers,
the shape of the dots is a cylindrical column or a cone,
the dots are regularly arranged, and
the occupancy rate of the dots on the current collector is 50-90%.*

As such in each of independent claims 1 and 8 there are the following four (4) recitations:

- (1) the diameter of each dot is 1 – 500 micrometers, and
- (2) the shape of the dots is a cylindrical column or a cone,
- (3) the dots are regularly arranged, and
- (4) the occupancy rate of the dots on the current collector is 50-90%.

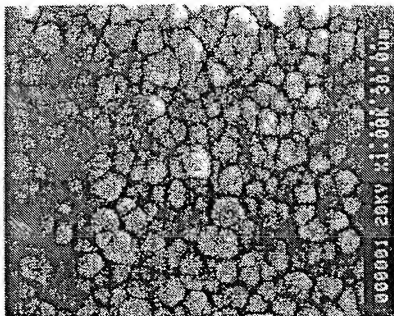
The above four (4) features of the claimed invention allow the inventors to establish the technical achievement of being able to precisely control the coefficient of volume expansion of the active material, in accordance, e.g., with Formula 1 as set forth at page 6 of the instant specification, which is:

$$\text{Coefficient of volume expansion} = (V_1 - V_0) / V_0 \times 100(\%) \quad (\text{Formula 1})$$

V_0 =volume before charge, V_1 = volume after charge

In contrast to the instant invention, however, the cited Ikeda et al. EP '278 reference shows and provides for irregular dot shapes in its disclosure, which can be easily seen in Fig. 15 of Ikeda et al. EP '278 (as set forth below for the Examiner's convenience).

FIG. 15



Amendment dated December 6, 2006

After Final Office Action of September 6, 2006

Accordingly, it is submitted that the cited Ikeda et al. EP '278 reference fails to provide to those of ordinary skill in the art any teaching or disclosure relating to the limitations in pending claims 1 and 8 of "*the shape of the dots is a cylindrical column or a cone,*" and "*the dots are regularly arranged*", and instead actually teaches away from the same by way of Figure 15 provided therein.

Therefore, it is submitted that one of ordinary skill in the art upon considering the full disclosure of the cited Ikeda et al. EP '278 reference (including Figure 15 thereof) would in no way find the instant invention as claimed to be obvious, including the four (4) limitations noted above, which allow the inventors to establish the technical achievement of being able to precisely control the coefficient of volume expansion of the active material in the instant invention.

Based on the above considerations, the USPTO is respectfully requested to reconsider and withdraw each of the outstanding rejection of record under 35 USC § 103(a) over the Ikeda et al. EP '278 reference. Any contention of the USPTO to the contrary must be reconsidered.

CONCLUSION

The Examiner is respectfully requested to issue a notice of allowance in the matter of the instant application, clearly indicating that each of instantly pending claims 1-14 are allowed and patentable under the provisions of Title 35 of the United States Code.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact John W. Bailey (Reg. No. 32,881)

Application No. 10/671,460

Docket No.: 0020-5182P

Amendment dated December 6, 2006

After Final Office Action of September 6, 2006

at the telephone number below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.14; particularly, extension of time fees.

Dated: December 6, 2006

Respectfully submitted,

By 

John W. Bailey

Registration No.: 32,881

BIRCH, STEWART, KOLASCH & BIRCH, LLP

8110 Gatehouse Road

Suite 100 East

P.O. Box 747

Falls Church, Virginia 22040-0747

(703) 205-8000

Attorney for Applicant